**GRAPHING DERIVED FUNCTIONS**

When given a graph of a function f(x) and asked to sketch its gradient function, it is best to draw the graph of f’(x)

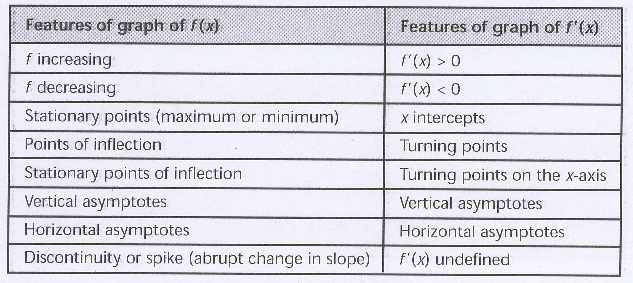
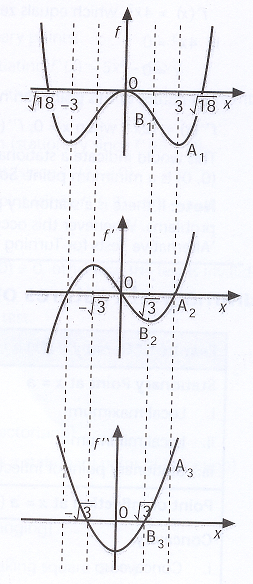
immediately below f(x) so that the scales on the x-axis line up. This allows you to note specific features on the

graph of f(x) and translate it to specific features on the graph of f’(x).

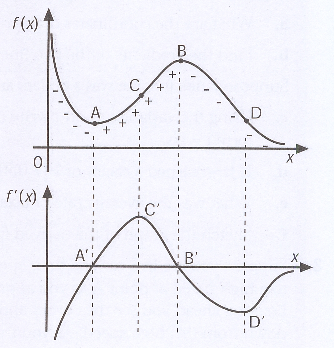
Graph 1 below is of the function f(x) = . Note that the turning points of f(x) line up with the x-intercepts

of f’(x) and the points of inflection of f(x) line up with the turning points of f’(x). In general the rules in the table

below can be used to sketch gradient functions.



1)



Graph 2 shows the use of the rules in the previous

table to sketch the derived function:

* Stationary/turning points A and B of f(x)

correspond to x-intercepts A’ and B’ of f’(x).

* Points of inflection C and D of f(x) correspond

to turning points C’ and D’ of f’(x).

* From 0 -> A and from B -> D, f(x) is decreasing,

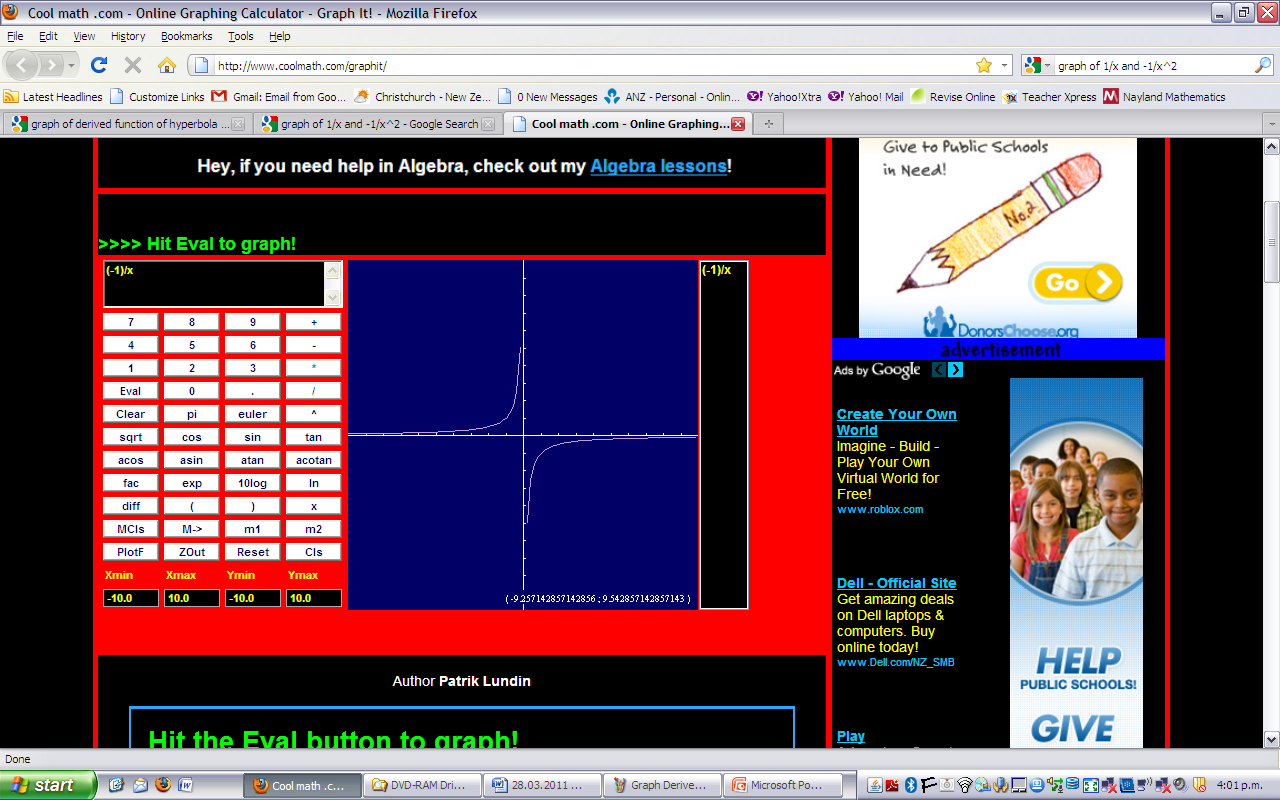
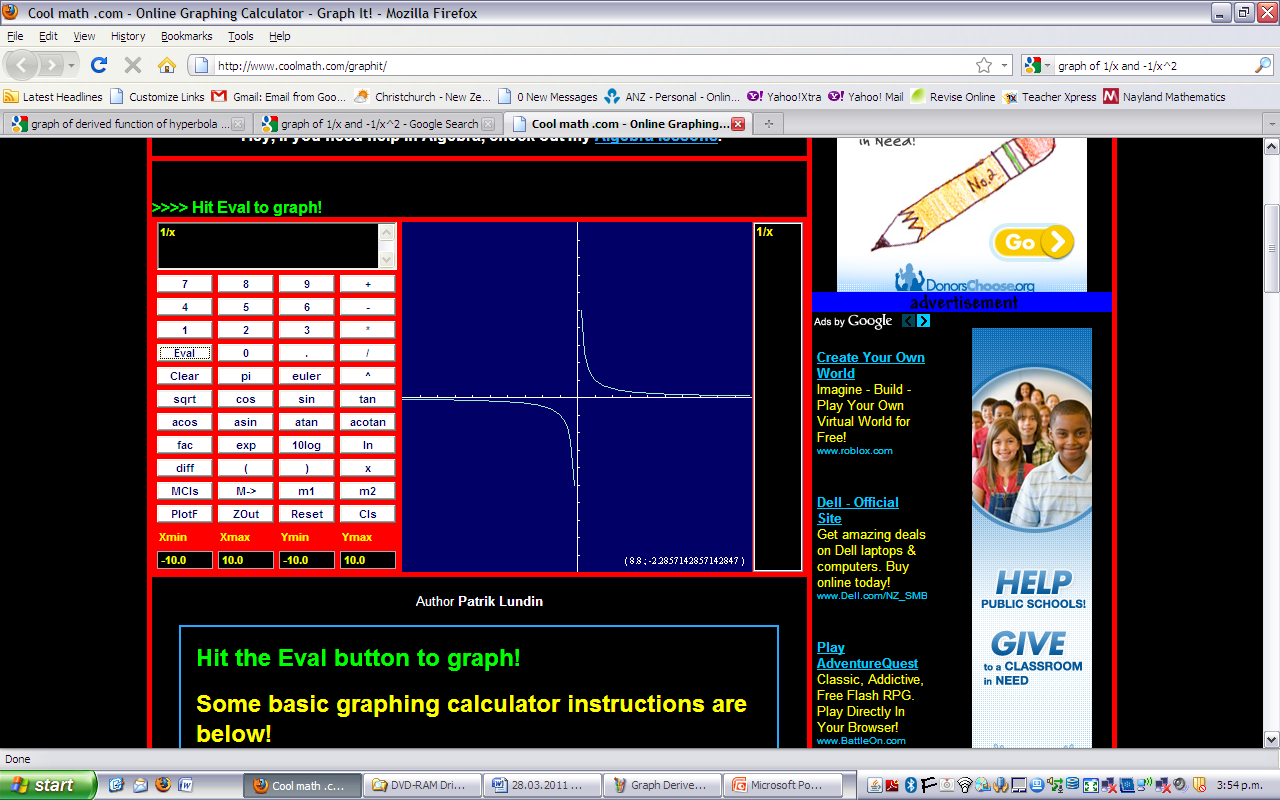
so f’(x) is below the x-axis.

* From A -> B, f(x) is increasing, so f’(x) is above

the x-axis.

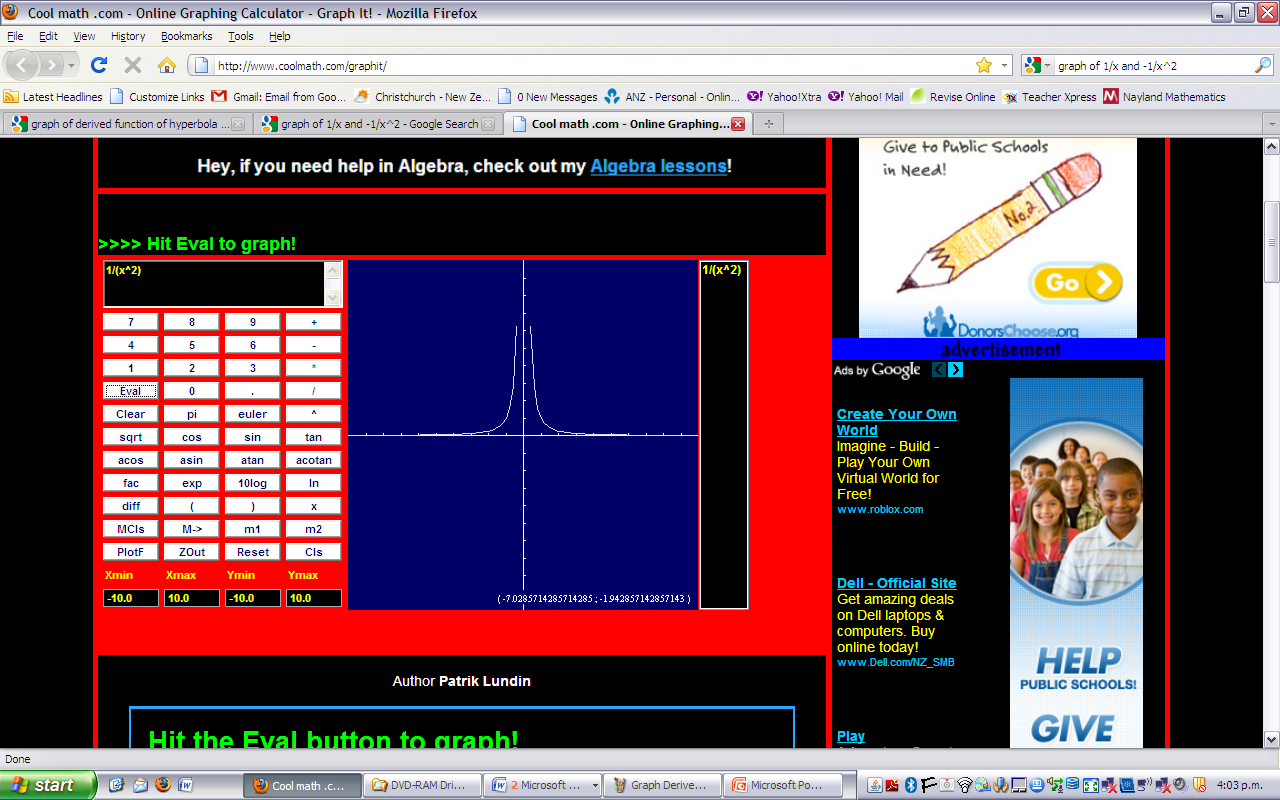
2)

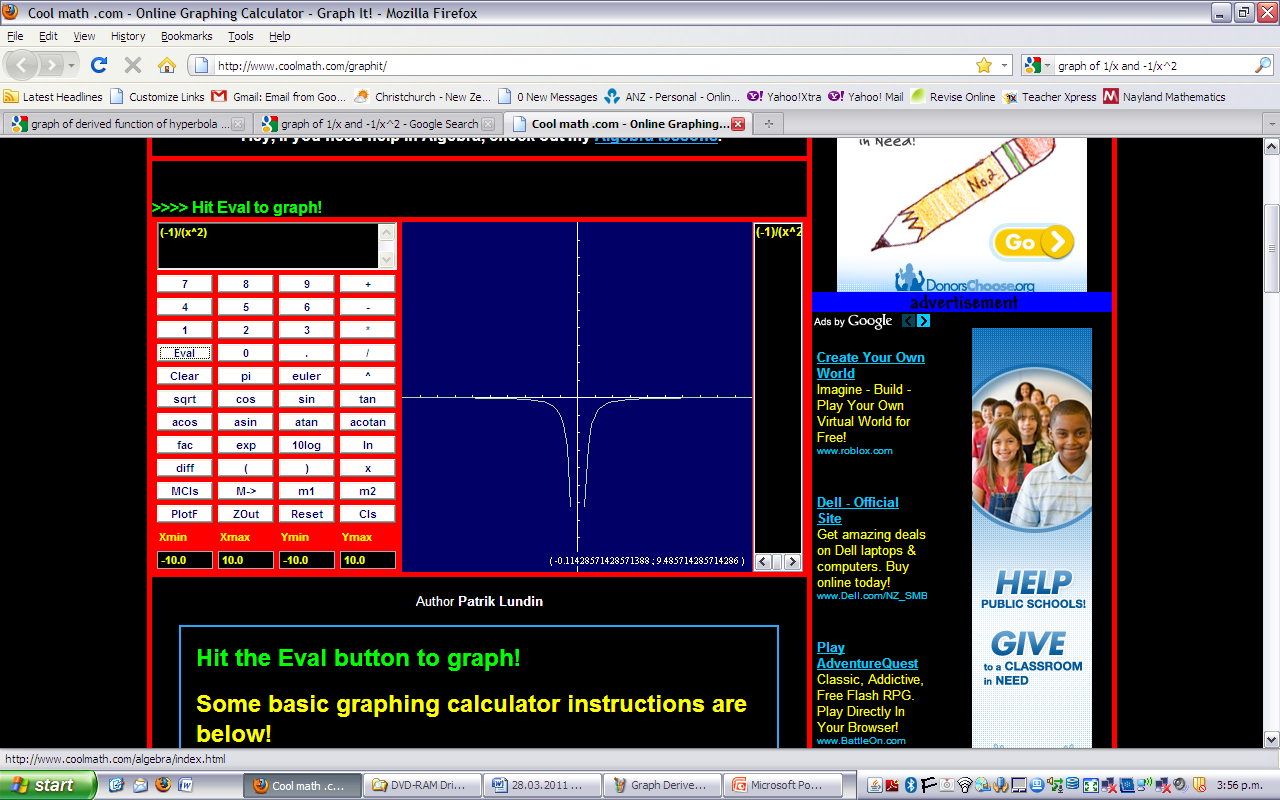
3) Also useful to note: graph of derived functions of hyperbolae

f(x) =

f(x) =





f(x) =

f’(x) =

